Host Texture Preference of an Ectoparasitic Opisthobranch, *Odostomia columbiana* Dall & Bartsch, 1909

BY

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(1 Plate)

INTRODUCTION

All members of the family Pyramidellidae, which includes *Odostomia columbiana* Dall & Bartsch, 1909, are considered to be ectoparasites, and each possesses a long, evaginable proboscis armed with a stylet which is used to extract body fluids from prey animals. In the region of Orcas Island, San Juan Archipelago, Washington, a preliminary survey indicated the incidence of association of *O. columbiana* with *Trichotropis cancellata* (Hinds, 1848), a filter-feeding prosobranch, to be about 41%.

Williams (1964) has demonstrated that choice of substrate by certain polychaete larvae is influenced by physical properties of the substrate, such as texture and contour, as well as by biotic factors. More specifically, Hopkins (1956) found that rough surfaces of oyster shells attracted more *Odostomia impressa* (Say, 1821) than did smooth. Because of the unusual nature of the spiny periostracum of *Trichotropis cancellata* (Figure *1*), its contribution to substrate preference by *Odostomia columbiana* was examined.

MATERIALS and METHODS

All experimental animals were maintained in aquaria provided with running sea water at the University of Washington Friday Harbor Laboratories. *Trichotropis cancellata* were collected in an area (known locally as the "potato patch") of East Sound (approximately 48°40′ N, 122°55′ W) off Orcas Island during August, 1969. After noting the number of *Odostomia columbiana* on each host, the parasites were removed and were held separately. Empty host shells and *Fusitriton oregonense* (Redfield, 1848), a conch whose surface resembles that of *T. cancellata,* were also retained when recovered from the dredge.

Experiments to determine the significance of host shell texture to host selection can be categorized as follows:

(1) *Odostomia columbiana* were presented with alternatives involving living *Trichotropis cancellata* having differences in texture,

(2) the alternative textures were present on a single snail,

(3) *Odostomia columbiana* were presented with living *Trichotropis cancellata* together with empty shells having variations in surface texture, and

(4) *Fusitriton oregonense,* with its similar surface characteristics was offered as an alternative to *T. cancellata.*

Unless otherwise noted, two potential host animals were placed in a 10 cm square container with wire screen on 2 of the sides and a grid on the bottom, and the container was set into a sea table. The hosts were allowed to move about until neither changed position over a 3-hour period. At this time, one *Odostomia columbiana* was placed midway between the two animals and observed at 30 minute intervals until it had moved onto one of the hosts. At no time during continued observations was an *O. columbiana* seen to leave a host once it had attached. Occasionally, the parasite would brush against a *Trichotropis cancellata* and then move away. If no choice was made within 8 to 10 hours, the experiment was terminated.

The first choice presented was a pair of *Trichotropis cancellata,* one untreated (Figure *1*), and one with the periostracum completely removed (Figure *3*). The periostracum was removed by abrasion with a wire brush and a metal file. Control experiments used 2 normal snails, one with an identifying drop of paint at the top of the spire.

In order to confirm that the choice of surface was not influenced by differences between the snails, other than

Figure 1

Figure 2

Figure 3

Figure 1: An untreated *Trichotropis cancellata* with *Odostomia columbiana* near its aperture × 2½

Figure 2: *Trichotropis cancellata* with a single strip of spiny periostracum removed × 2½

Figure 3: *Trichotropis cancellata* with spiny periostracum entirely removed × 2½